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WRITER'S DIRECT DIAL NUMBER

February 6, 1997

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kowalski@khlaw.com

William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W.
Room 222
Washington, D.C. 20554

Re: ET Docket No. 96-8;
Part 15 Spread Spectrum Transmitter Proceeding;
Ex Parte Meeting

Dear Mr. Caton:

The purpose of this letter is to provide notice that on February 6, 1997, Michael Mulcay of Mulcay Communications Associates and Raymond A. Kowalski and Randall D. Young of Keller and Heckman, LLP, on behalf of Western Multiplex Corporation, met with Commissioner Chong's staff to discuss the above-captioned proceeding.

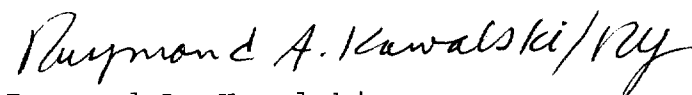
Our discussion concerned the Commission's proposal to change Part 15 rules to limit the EIRP of spread spectrum transmitters and to eliminate the use of high-gain, directional antennas in the 2.4 GHz band. As representatives of industrial users of spread spectrum transmitters, we expressed our belief that the Commission should allow technology and the marketplace to regulate unlicensed spectrum such as the Part 15 bands. We further expressed that this may be fairly and efficiently done by removing the EIRP and directional antenna limitations for spread spectrum transmitters operating in both the 2.4 GHz and 5.8 GHz bands. A fuller description of our position is found in our comments on file in this proceeding.

William F. Caton
February 6, 1997
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KELLER AND HECKMAN LLP

Should the Commission require further information, it
is respectfully requested to contact the undersigned at
(202) 434-4230.

Very truly yours,

A handwritten signature in cursive script, reading "Raymond A. Kowalski/ry".

Raymond A. Kowalski

Enclosure

cc: Mr. Michael Mulcay

WESTERN MULTIPLEX
EX PARTE PRESENTATION
IN ET DOCKET NO. 96-8

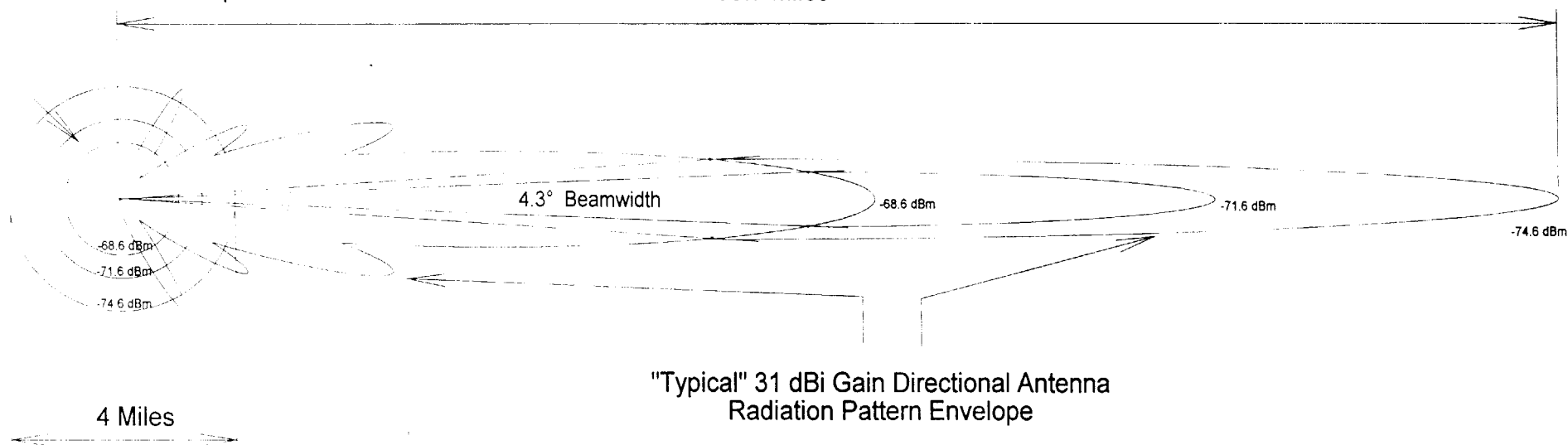
The FCC should permit the use of high-gain, directional antennas without a reduction in transmitter power below 1 watt for Part 15 Spread Spectrum systems in the 2.4 GHz band as well as in the 5.8 GHz band.

1. The FCC created in the Part 15 rules a transition period with no EIRP restriction in order to encourage the development of spread spectrum technologies.
2. Western Multiplex responded by producing a direct sequence spread spectrum radio with T1 capacity; initially for the 2.4 GHz band and then for the 5.8 GHz band.
3. The market responded by adopting spread spectrum technology for point-to-point applications, principally in the 2.4 GHz band. (tens of thousands of transmitters in service)
4. Part 15 rules should not favor one technology over another, the market should.
5. The use of high-gain, directional antennas pose no greater potential for interference than the use of low, or even unity, gain antennas poses. (illustrations)
6. Interference is reciprocal and self-correcting: a Part 15 unlicensed system is as likely to be interfered with as to interfere, and users will take corrective action to clear either case.

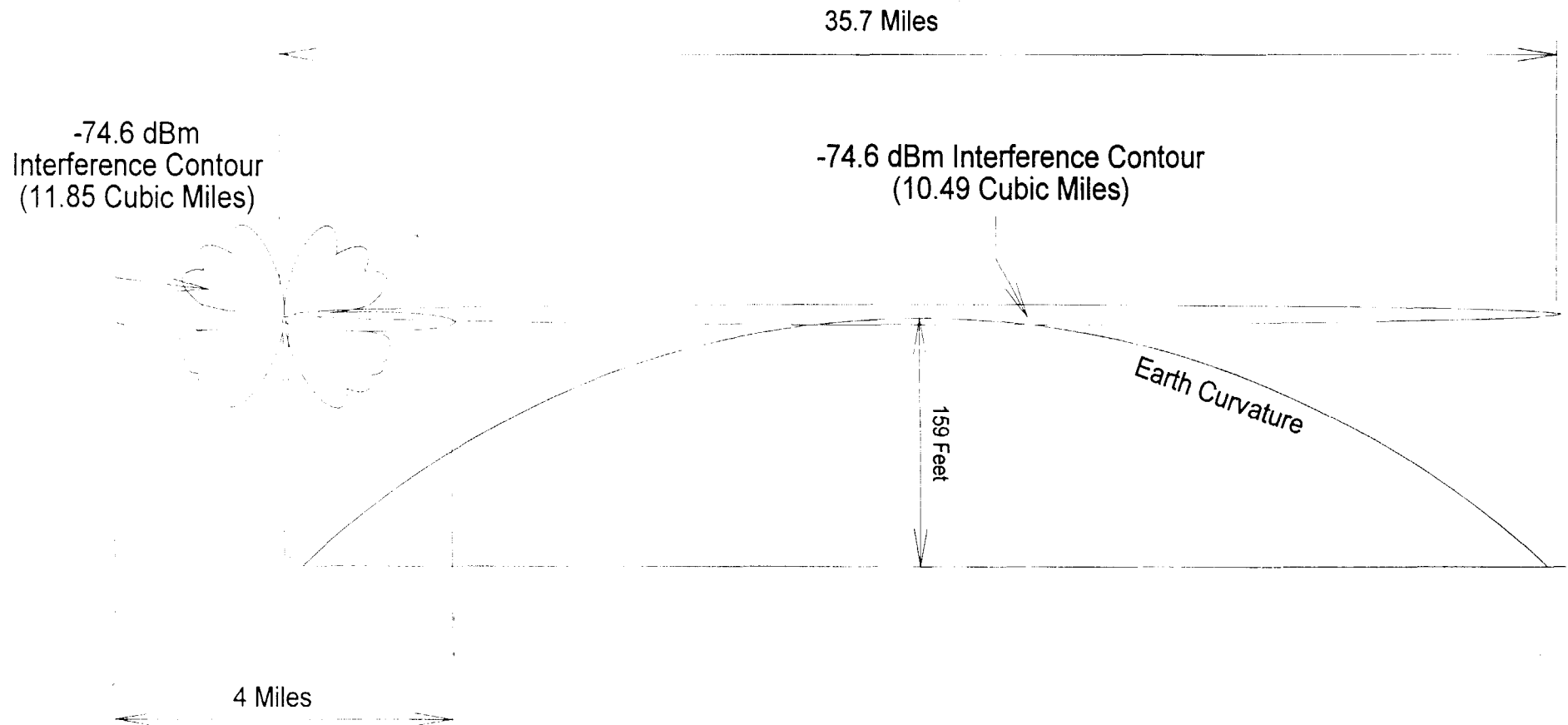
7. Unlicensed users of Part 15 frequencies consider the risk of interference prior to investing in equipment.
8. Spread spectrum technology, including the use of narrow-beam, high-gain antennas, provide sufficient countermeasures to eliminate most interference.
9. The use of high-gain directional antennas has enabled industry to satisfy communications needs reliably, cost-effectively and with minimal regulatory burden. (industry examples; see ET Docket No. 96-35 Report and Order))
10. The use of high-gain antennas are necessary to overcome the noise floor created by the primary users of the spectrum, Part 18 ISM devices. (Part 18 devices have no limit on allowable radiated energy)
11. Direct sequence spread spectrum systems pose less interference potential than frequency hopping systems and should be permitted to use high-gain antennas with no power reduction below 1 watt. (comparison chart)
12. Point-to-point Part 15 systems are used to support the National Information Infrastructure ("NII"), just as do other Part 15 technologies, such as wireless LANs.

HORIZONTAL VIEW

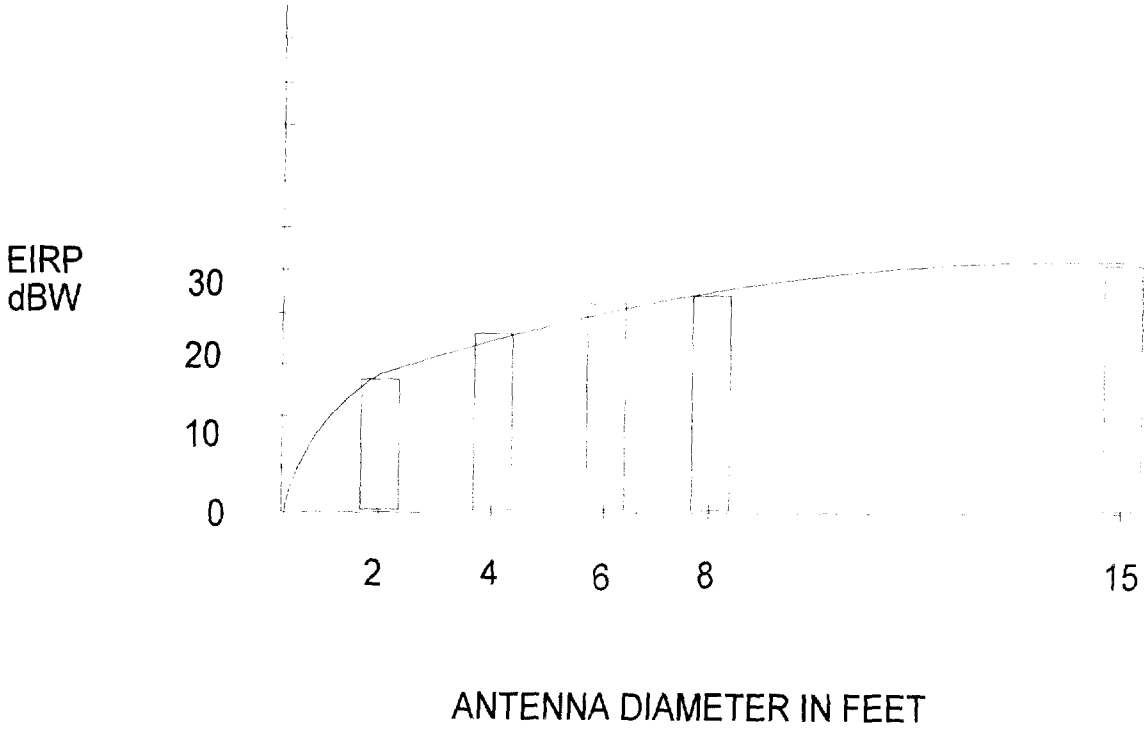
6 dBi Omnidirectional Antenna
Radiation Pattern Envelope



VERTICAL VIEW



TYPICAL EIRP VS ANTENNA SIZE



COST COMPARISON OF IMPLEMENTING PROPOSED SPREAD SPECTRUM TRANSMITTER RULES VS OLD RULES

ANTENNA COSTS

| ALLOWED EIRP | OLD RULES (With Waivers) | PROPOSED NEW RULES ¹ (1 dB Reduction for 3 dB Gain) |
|-----------------|-----------------------------|---|
| 20 dBW | \$ 1,600 | \$ 3,000 |
| 26 dBW | \$ 3,000 | >\$ 30,000 (Custom Made) |
| 32 dBW | \$ 5,600 | Not Practical |

¹Note: Extra cost is not associated with any public benefit, such as reduced potential for interference into either Part 90 or other Part 15 devices. The major threat of interference is from Part 18 devices.

Also note: implementation of proposed new rules would reduce the reliability of point-to-point systems, including systems used for private networks, commercial wireless and interconnection to the National Information Infrastructure.

**WESTERN MULTIPLEX
EX PARTE PRESENTATION
IN ET DOCKET NO. 96-8**

Operation of Communications Equipment in Frequency Bands that Allow Unlimited Radiation from Non-Communications Equipment

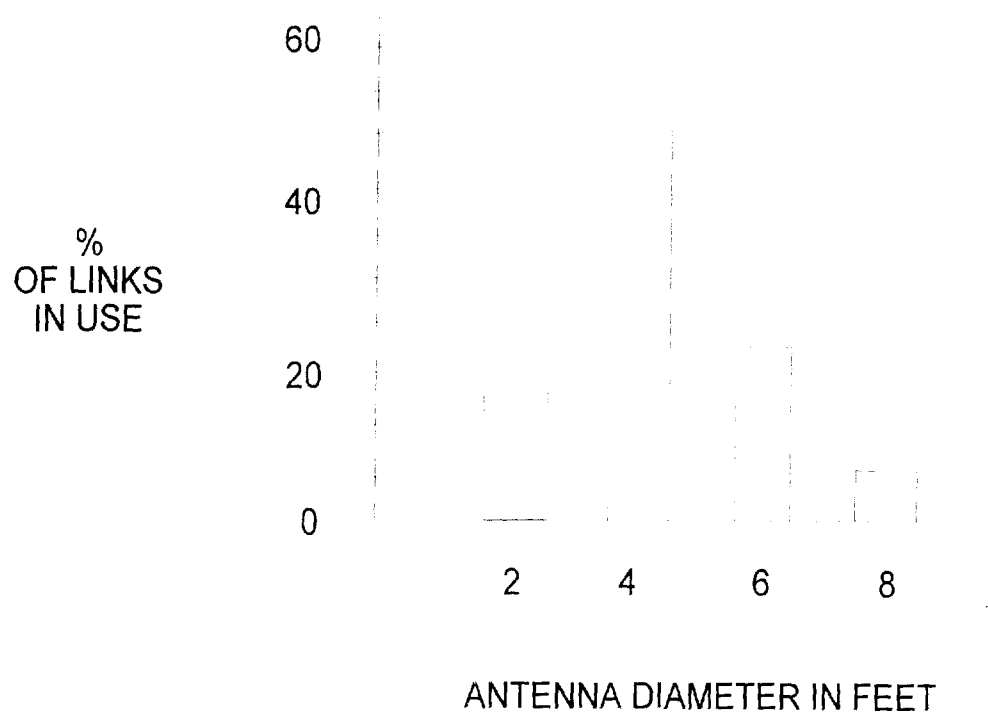
Evolving Regulation of Spread Spectrum Technology

- * 1985 FCC authorizes the operation of Spread Spectrum systems in the 902-928MHz, 2400-2483.5MHz and 5725-5850MHz ISM bands with 1 Watt transmitter output power into any antenna.
- * 1990 FCC amends the rules to limit the EIRP to 6dBW. The rule change to apply to systems manufactured after June 1994. The reason for the change was *concern* that systems with an output power of 1 Watt into directional antennas *could* be a source of harmful interference to systems having an output power of 1 Watt into omnidirectional antennas.
- * 1994 FCC grants waivers (pending a rule making) to allow the continued manufacture and deployment of systems with a transmitter output power of 1 Watt into any antenna in the 2400-2483.5MHz and 5725-5850MHz bands.

A Fourteen Year Precedent Allowing a Transmitter Power of 1 Watt into Any Antenna

- * Since 1985 the FCC has allowed, through a rule making and subsequent waivers, Spread Spectrum Transmitters to operate in the 2.4 GHz and 5.8 GHz ISM bands with 1 Watt of output power into any antenna.
- * There are now tens of thousands of spread spectrum radio systems successfully operating in the 2.4 GHz and 5.8 GHz ISM bands with output powers of 1 Watt into a wide variety of antennas.

USE VS ANTENNA SIZE



Green Mesa and Flagstaff, Colorado

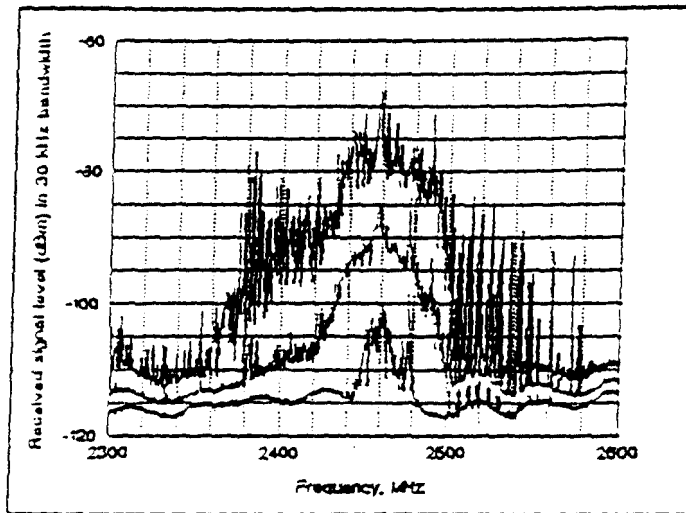


Figure E-3. Aggregate emission spectrum from Green Mesa.

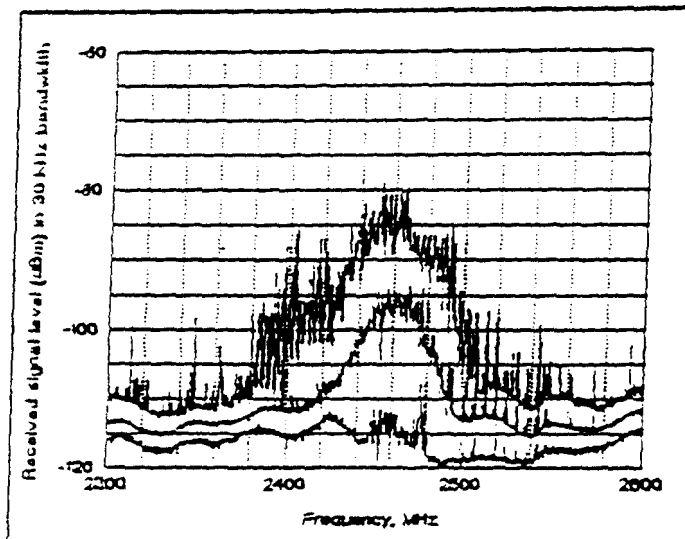


Figure E-4. Aggregate emission spectrum from Flagstaff.

[illegible]

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Lowering the EIRP to 6 dBW will Guarantee a Tragedy by Lowering the $C/(I+N)$ Ratio Below the Requirements of Many Users

- * In rural areas and in off-shore applications, thermal noise (N) is often the governing parameter. Lowering the level of the carrier (C) will harm the public interest by, in many cases, lowering the signal quality to below acceptable levels.
- * In metropolitan areas, interference (I) from Part 18 devices is often the governing parameter. Lowering the the carrier level (C) will harm the public interest by, in many cases, lowering the received signal quality to below acceptable levels.

Communications Equipment Operating in the ISM Bands is Unprotected from Interference

- * Part 18 of the FCC rules allows **Unlimited Radiation** from non-communications equipment operating in the 2.4 GHz and 5.8 GHz ISM bands.
- * Lowering the EIRP for Part 15 communications equipment operating in the same 2.4 GHz and 5.8 GHz ISM bands **will increase** the potential for interference from Part 18 devices.
- * Equipment manufacturers or operators who are concerned about harmful radiation should not be in an ISM band. They should operate in a licensed band or if they want to operate unlicensed, in the 5.2 GHz NII/SUPERnet band, where there is no radiation from non-communications, Part 18, equipment.

Under Part 15 of the Rules Operators are Required to Cause No Harmful Interference and to Accept Interference

- * It is therefore in the operators best interest to minimize the potential for harmful interference and to purchase equipment with the best $C/(I+N)$ performance.
- * Any Part 15 regulation that implies protection from harmful radiation in the ISM bands is misleading because Part 15 receivers must accept interference and there is no limit on radiation from Part 18 devices.

If it is Not Broke, Don't Fix it!!!

- * For the past fourteen years the Commission has allowed transmitters to operate in the 2.4 GHz and 5.8 GHz ISM bands with up to 1 Watt of transmitter power into any antenna.
- * During the past fourteen years a whole new industry has developed creating thousands of new jobs and tens of thousands of spread spectrum radios have been deployed to serve a broad range of public needs.
- * The existing Part 15 regulations, with waivers on EIRP, have allowed American industry to become the world leader in the design and development of spread spectrum technology.
- * The existing Part 15 regulations, with waivers on EIRP, have allowed the American public to lead the world in the use and application of spread spectrum technology.
- * Nothing is broke. Don't fix it!!!

Arguments Against Imposing an EIRP Limit of 6 dBW on Communications Equipment Operating in the 2.4 GHz and 5.8 GHz ISM Bands

1. **There is no** radiation limit imposed on Part 18, non-communications equipment, operating in the ISM bands.
2. Lowering the EIRP to 6 dBW **will** deprive a significant portion of the American public the benefits of spread spectrum technology by reducing the C/(I+N) ratio to unusable levels.
3. Lowering the EIRP to 6 dBW **will** increase the potential for interference by lowering the C/(I+N).
4. Any Part 15 regulation that implies protection from harmful radiation in the ISM bands **will mislead** the public because the Commission allows unlimited radiation from Part 18 devices.
5. 6dBW is an **arbitrary** value.

6. The FCC has a **Fourteen Year precedent** of allowing a transmitter power of one Watt into any antenna.
7. During the past fourteen years a whole new industry has developed, creating thousands of new manufacturing jobs.
8. Over the past fourteen years' tens of thousands of spread spectrum radios have been deployed, creating thousands of service and operational jobs.
9. **There is no** operational or theoretical evidence to justify ignoring fourteen years of operational experience and data.
10. **There is** irrefutable evidence that imposing a limit on EIRP based on an arbitrary value of 6 dBW **will** harm American industry and the American public.